



1636

Box-seq

(Rel.88-11/01 Pub.605)

FORM 9-37

9-221

RECEIVED

OCT 16 2002

TECH CENTER 1600/2900

Practitioner's Docket No. NEB-181

PATENT

#16D  
Zeta  
TO-16-02

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Vaisvila

Application No.: 09 / 689,343 Group No.: 1636

Filed: October 12, 2000 Examiner: D. Guzo

For: Method For Cloning And Producing The MseI Restriction Endonuclease

## Box Sequence

Assistant Commissioner for Patents  
Washington, D.C. 20231SUBMISSION OF "SEQUENCE LISTING," COMPUTER READABLE COPY,  
AND/OR AMENDMENT PERTAINING THERETO  
FOR BIOTECHNOLOGY INVENTION CONTAINING NUCLEOTIDE  
AND/OR AMINO ACID SEQUENCE

(check and complete this item, if applicable)

1.  This replies to the Office Letter dated September 24, 2002.

NOTE: If these papers are filed before the office letter issues, adequate identification of the original papers should be made, e.g., in addition to the name of the inventor and title of invention, the filing date based on the "Express Mail" procedure, the application number from the return post card or the attorney's docket number added.

 A copy of the Office Letter is enclosed.

## CERTIFICATION UNDER 37 C.F.R. §§ 1.8(a) and 1.10\*

(When using Express Mail, the Express Mail label number is mandatory;  
Express Mail certification is optional.)

I hereby certify that, on the date shown below, this correspondence is being:

## MAILING

 deposited with the United States Postal Service in an envelope addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231

37 C.F.R. § 1.8(a)

 with sufficient postage as first class mail.  as "Express Mail Post Office to Addressee"  
Mailing Label No. \_\_\_\_\_ (mandatory)

## TRANSMISSION

 transmitted by facsimile to the Patent and Trademark OfficeDate: 10/3/02

Signature

Melissa A. Jackson

(type or print name of person certifying)

\*WARNING: Each paper or fee filed by Express Mail must have the number of the "Express Mail" mailing label placed thereon prior to mailing. 37 C.F.R. § 1.10(b).

"Since the filing of correspondence under § 1.10 without the Express Mail mailing label thereon is an oversight that can be avoided by the exercise of reasonable care, requests for waiver of this requirement will not be granted on petition." Notice of Oct. 24, 1996, 60 Fed. Reg. 56,439, at 56,442.

10/11/2002 MBERHE 0000007 09689343

(Submission—Nucleotide and/or Amino Acid Sequence [9-37]—page 1 of 6)

01 FC:216

200.00 OP

BEST AVAILABLE COPY

IDENTIFICATION OF PERSON MAKING STATEMENT

2. I, Harriet M. Strimpel  
(type or print name of declarant signing below)

state the following:

ITEMS BEING SUBMITTED

3. Submitted herewith is/are:

(check each item as applicable)

- A.  "Sequence Listing(s)" for the nucleotide and/or amino acid sequence(s) in this application. Each "Sequence Listing" is assigned a separate Identifier as required in 37 C.F.R. § 1.821(c) and 37 C.F.R. §§ 1.822 and 1.823.
- B.  An amendment to the description and/or claims, wherein reference is made to the sequence by use of the assigned identifier, as required in 37 C.F.R. § 1.821(d).
- C.  A copy of each "Sequence Listing" submitted for this application in computer readable form, in accordance with the requirements of 37 C.F.R. §§ 1.821(e) and 1.824.
- D.  Please transfer to this application, in accordance with 37 C.F.R. § 1.821(e), the computer readable copy(ies) from applicant's other application identified as follows:

In re application of:

Application No.: 0 /  
Filed:  
For:

Group No.:  
Examiner:

The Computer readable form(s) of applicant's other application corresponds to the "Sequence Identifier(s)" of the application as follows:

Computer Readable Form  
(other application)

"Sequence Identifier"  
(this application)

(Submission—Nucleotide and/or Amino Acid Sequence [9-37]—page 2 of 6)

NOTE: "If the computer readable form of a new application is to be identical with the computer readable form of another application of the applicant on file in the Office, reference may be made to the other application and computer readable form in lieu of filing a duplicate computer readable form in the new application. The new application shall be accompanied by a letter making such reference to the other application and computer readable form, both of which shall be completely identified." 37 C.F.R. § 1.821(e).

E.  A statement that the content of each "Sequence Listing" submitted and each computer readable copy are the same, as required in 37 C.F.R. § 1.821(g).  
 Because the statement is not made by a person registered to practice before the Office, the statement is verified as required in 37 C.F.R. § 1.821(b).

F.  Because this submission is made in fulfilling the requirement under 37 C.F.R. § 1.821(g), a statement that the submission includes no new matter.  
 Because the statement is not made by a person registered to practice before the Office, the statement is verified, as required in 37 C.F.R. § 1.821(g).

**STATEMENT THAT "SEQUENCE LISTING"  
AND COMPUTER READABLE COPY ARE THE SAME  
AND/OR THAT PAPERS SUBMITTED INCLUDES NO NEW MATTER**

4. I hereby state:

(complete applicable item A and/or B)

A.  Each computer readable form submitted in this application, including those forms requested to be transferred from applicant's other application, is the same as the "Sequence Listing" to which it is indicated to relate.

B.  All papers accompanying this submission, or for which a request for transfer from applicants' other application, introduce no new matter.

**STATUS**

5. Applicant is

a small entity. A statement:  
 is attached.  
 was already filed.  
 other than a small entity.

(Submission—Nucleotide and/or Amino Acid Sequence [9-37]—page 3 of 6)

**BEST AVAILABLE COPY**

## EXTENSION OF TERM

6.

**NOTE:** 37 C.F.R. § 1.704(b) ". . .an applicant shall be deemed to have failed to engage in reasonable efforts to conclude processing or examination of an application for the cumulative total of any periods of time in excess of three months that are taken to reply to any notice or action by the Office making any rejection, objection, argument, or other request, measuring such three-month period from the date the notice or action was mailed or given to the applicant, in which case the period of adjustment set forth in § 1.703 shall be reduced by the number of days, if any, beginning on the day after the date that is three months after the date of mailing or transmission of the Office communication notifying the applicant of the rejection, objection, argument, or other request and ending on the date the reply was filed. The period, or shortened statutory period, for reply that is set in the Office action or notice has no effect on the three-month period set forth in this paragraph."

**NOTE:** "Extension of Time in Patent Cases (Supplement Amendments)—If a timely and complete response has been filed after a Non-Final Office Action, an extension of time is not required to permit filing and/or entry of an additional amendment after expiration of the shortened statutory period.

*If a timely response has been filed after a Final Office Action, an extension of time is required to permit filing and/or entry of a Notice of Appeal or filing and/or entry of an additional amendment after expiration of the shortened statutory period unless the timely-filed response placed the application in condition for allowance. Of course, if a Notice of Appeal has been filed within the shortened statutory period, the period has ceased to run." Notice of Dec. 10, 1985 (1061 O.G. 34-35).*

**NOTE:** See 37 C.F.R. § 1.645 for extensions of time in interference proceedings and 37 C.F.R. § 1.550(c) for extensions of time in reexamination proceedings.

7. The proceedings herein are for a patent application and the provisions of 37 C.F.R. § 1.136 apply.

*(complete (a) or (b) as applicable)*

(a)  Applicant petitions for an extension of time under 37 C.F.R. § 1.136 (fees: 37 C.F.R. § 1.17(a)(1)-(4)) for the total number of months checked below:

<u>Extension (months)</u>	<u>Fee for other than small entity</u>	<u>Fee for small entity</u>
<input type="checkbox"/> one month	\$ 110.00	\$ 55.00
<input type="checkbox"/> two months	\$ 400.00	\$ 200.00
<input checked="" type="checkbox"/> three months	\$ 920.00	\$ 460.00
<input type="checkbox"/> four months	\$ 1,440.00	\$ 720.00

Fee: \$ 200.00

If an additional extension of time is required, please consider this a petition therefor.

*(check and complete the next item, if applicable)*

An extension for \_\_\_\_\_ months has already been secured. The fee paid therefor of \$\_\_\_\_\_ is deducted from the total fee due for the total months of extension now requested.

Extension fee due with this request \$ 200.00

OR

(b)  Applicant believes that no extension of term is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition for extension of time.

*(Submission—Nucleotide and/or Amino Acid Sequence [9-37]—page 4 of 6)*

## FEE PAYMENT

8.  Attached is a  check  money order in the amount of \$ 200.00  
 Authorization is hereby made to charge the amount of \$ \_\_\_\_\_  
 to Deposit Account No. \_\_\_\_\_  
 to Credit card as shown on the attached credit card information authorization form PTO-2038.

**WARNING:** Credit card information should not be included on this form as it may become public.

Charge any additional fees required by this paper or credit any overpayment in the manner authorized above.

A duplicate of this paper is attached.

## FEE DEFICIENCY

9.

**NOTE:** If there is a fee deficiency and there is no authorization to charge an account, additional fees are necessary to cover the additional time consumed in making up the original deficiency. If the maximum, six-month period has expired before the deficiency is noted and corrected, the application is held abandoned. In those instances where authorization to charge is included, processing delays are encountered in returning the papers to the PTO Finance Branch in order to apply these charges prior to action on the cases. Authorization to charge the deposit account for any fee deficiency should be checked. See the Notice of April 7, 1986, 1065 O.G. 31-33.

10.  If any additional extension and/or fee is required, charge  
 Deposit Account No. 14-0740  
 Credit card as shown on the attached credit card information authorization form PTO-2038.

**WARNING:** Credit card information should not be included on this form as it may become public.

## SIGNATURE(S)

Harriet M. Strimpel

(type or print name of person signing statement)

Sept 30, 2002

Date

Signature

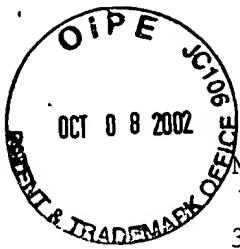
Harriet M. Strimpel

P.O. Address of Signatory

(if applicable)  
 Telephone No. ( 978 ) 927-5054 X:373  
 Reg. No. 37008  
 Customer No.: 28986

Inventor(s)  
 Assignee of complete interest  
 Person authorized to sign on behalf of assignee  
 Practitioner of record  
 Filed under Rule 34(a)  
 Registration No. 37008  
 Other \_\_\_\_\_

(specify identity of declarant)



(complete the following, if applicable)

New England Biolabs, Inc.

(type name of assignee)

32 Tozer Road

Address of assignee

Beverly, MA 01915

Secretary

Title of person authorized to sign on behalf of  
assignee

A "STATEMENT UNDER 37 C.F.R. § 3.73(b)" is attached.

Assignment recorded in PTO on mailed with Application on 10/12/2000

Reel \_\_\_\_\_ Frame \_\_\_\_\_

Reg. No.: 37008

SIGNATURE OF PRACTITIONER

Harriet M. Strimpel, D.Phil.

Tel. No.: (978) 927-5054 X:373

(type or print name of practitioner)

Patent Counsel

New England Biolabs, Inc.

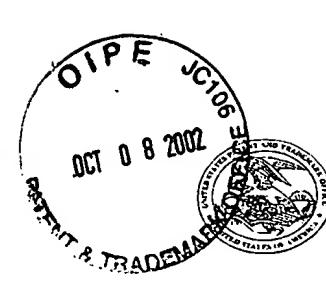
P.O. Address

Customer No.: 28986

32 Tozer Road

Beverly, MA 01915

(Submission—Nucleotide and/or Amino Acid Sequence [9-37]—page 6 of 6)



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/689,343	10/12/2000	Romualdas Vaisvila	NEB-181	7976

28986 7590 09/24/2002

NEW ENGLAND BIOLABS, INC.  
32 TOZER ROAD  
BEVERLY, MA 01915

EXAMINER

GUZO, DAVID

ART UNIT

PAPER NUMBER

1636

DATE MAILED: 09/24/2002

15

Please find below and/or attached an Office communication concerning this application or proceeding.



UNITED STATES DEPARTMENT OF COMMERCE  
Patent and Trademark Office  
Address: ASSISTANT COMMISSIONER FOR PATENTS  
Washington, D.C. 20231

APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR / PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.
---------------------------------	-------------	---	---------------------

EXAMINER

ART UNIT      PAPER

15

DATE MAILED:

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

*SEE ATTACHMENT -*

**Attachment**

The communication filed 7/2/02 is not fully responsive to the Office communication mailed 6/19/02 for the reason(s) set forth below or on the attached Notice To Comply With The Sequence Rules or CRF Diskette Problem Report.

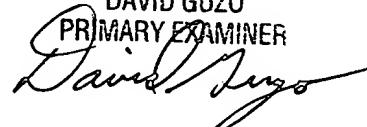
If a complete reply has not been submitted by the time the shortened statutory period set in the communication mailed 6/19/02 has expired, this application will become abandoned unless applicant corrects the deficiency and obtains an extension of time under 37 CFR 1.136(a). In no case may an applicant extend the period for reply beyond the SIX MONTH statutory period.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Guzo whose telephone number is (703) 308-1906. The examiner can normally be reached on Monday-Thursday from 8:00 AM to 5:30 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Irem Yucel, can be reached on (703) 305-1998. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-4242. Faxes may be sent directly to the examiner at (703) 746-5061.

Any inquiry of a general nature or relating to the status of this application or proceeding or relating to attachments to this Office Action should be directed to Patent Analyst Zeta Adams whose telephone number is (703) 305-3291.

David Guzo  
September 23, 2002

DAVID GUZO  
PRIMARY EXAMINER  




Applicant's Copy

Application No.

09/689343

NOTICE TO OFFICE TO COMPLY WITH REQUIREMENTS FOR PATENT APPLICATIONS CONTAINING NUCLEOTIDE SEQUENCE AND/OR AMINO ACID SEQUENCE DISCLOSURES

The nucleotide and/or amino acid sequence disclosure contained in this application does not comply with the requirements for such a disclosure as set forth in 37 CFR 1.821 - 1.825 for the following reason(s):

1. This application clearly fails to comply with the requirements of 37 CFR 1.821 - 1.825. Applicant's attention is directed to these regulations, published at 1114 OG 29, May 15, 1990 and at 55 FR 18230, May 1, 1990.

2. This application does not contain, as a separate part of the disclosure on paper copy, a "Sequence Listing" as required by 37 CFR 1.821(c).

3. A copy of the "Sequence Listing" in computer readable form has not been submitted as required by 37 CFR 1.821(e).

4. A copy of the "Sequence Listing" in computer readable form has been submitted. However, the content of the computer readable form does not comply with the requirements of 37 CFR 1.822 and/or 1.823, as indicated on the attached copy of the marked-up "Raw Sequence Listing."

5. The computer readable form that has been filed with this application has been found to be damaged and/or unreadable as indicated on the attached CRF Diskette Problem Report. A substitute computer readable form must be submitted as required by 37 CFR 1.825(d).

6. The paper copy of the "Sequence Listing" is not the same as the computer readable form of the "Sequence Listing" as required by 37 CFR 1.821(e).

7.

Other: \_\_\_\_\_

RECEIVED

OCT 16 2002

Applicant must provide:

TECH CENTER 1600/2900

An initial or substitute computer readable form (CRF) copy of the "Sequence Listing"

An initial or substitute paper copy of the "Sequence Listing", as well as an amendment directing its entry into the specification

A statement that the content of the paper and computer readable copies are the same and, where applicable, include no new matter, as required by 37 CFR 1.821(e) or 1.821(f) or 1.821(g) or 1.825(b) or 1.825(d)

For questions regarding compliance with these requirements, please contact:

For Rules Interpretation, call (703) 308-1123

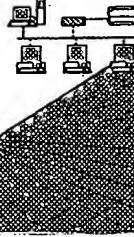
For CRF submission help, call (703) 308-4212

For PatentIn software help, call (703) 557-0400



Applicant's Copy

BIOTECHNOLOGY  
SYSTEMS  
BRANCH



1680

## RAW SEQUENCE LISTING ERROR REPORT

1636

#14

The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) detected errors when processing the following computer readable form:

Application Serial Number: 09/689,343C  
Source: 1600  
Date Processed by STIC: 7/19/02

RECEIVED

AUG 14 2002

TECH CENTER 1600/2900

THE ATTACHED PRINTOUT EXPLAINS DETECTED ERRORS.

PLEASE FORWARD THIS INFORMATION TO THE APPLICANT BY EITHER:

- 1) INCLUDING A COPY OF THIS PRINTOUT IN YOUR NEXT COMMUNICATION TO THE APPLICANT, WITH A NOTICE TO COMPLY or,
- 2) TELEPHONING APPLICANT AND FAXING A COPY OF THIS PRINTOUT, WITH A NOTICE TO COMPLY

FOR CRF SUBMISSION QUESTIONS, PLEASE CONTACT MARK SPENCER, 703-308-4212.

FOR SEQUENCE RULES INTERPRETATION, PLEASE CONTACT ROBERT WAX, 703-308-4216.

PATENTIN 2.1 e-mail help: [patin21help@uspto.gov](mailto:patin21help@uspto.gov) or phone 703-306-4119 (R. Wax)

PATENTIN 3.0 e-mail help: [patin3help@uspto.gov](mailto:patin3help@uspto.gov) or phone 703-306-4119 (R. Wax)

TO REDUCE ERRORED SEQUENCE LISTINGS, PLEASE USE THE CHECKER VERSION 3.1 PROGRAM, ACCESSIBLE THROUGH THE U.S. PATENT AND TRADEMARK OFFICE WEBSITE. SEE BELOW FOR ADDRESS:

<http://www.uspto.gov/web/offices/pac/checker>

Applicants submitting genetic sequence information electronically on diskette or CD-Rom should be aware that there is a possibility that the disk/CD-Rom may have been affected by treatment given to all incoming mail.

Please consider using alternate methods of submission for the disk/CD-Rom or replacement disk/CD-Rom.

Any reply including a sequence listing in electronic form should NOT be sent to the 20231 zip code address for the United States Patent and Trademark Office, and instead should be sent via the following to the indicated addresses:

1. EFS-Bio (<http://www.uspto.gov/ebc/efs/downloads/documents.htm>), EFS Submission User Manual - ePAVE)
2. U.S. Postal Service: U.S. Patent and Trademark Office, Box Sequence, P.O. Box 2327, Arlington, VA 22202
3. Hand Carry directly to:  
U.S. Patent and Trademark Office, Technology Center 1600, Reception Area, 7<sup>th</sup> Floor, Examiner Name, Sequence Information, Crystal Mall One, 1911 South Clark Street, Arlington, VA 22202  
Or  
U.S. Patent and Trademark Office, Box Sequence, Customer Window, Lobby, Room 1B03, Crystal Plaza Two, 2011 South Clark Place, Arlington, VA 22202
4. Federal Express, United Parcel Service, or other delivery service to: U.S. Patent and Trademark Office, Box Sequence, Room 1B03-Mailroom, Crystal Plaza Two, 2011 South Clark Place, Arlington, VA 22202

Revised 01/29/2002

TECH CENTER 1600/2900

OCT 16 2002

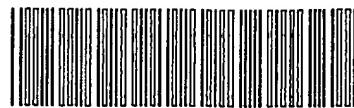
RECEIVED

RECEIVED

Page 1 of 8

AUG 14 2002

TECH CENTER 1600/2900



1600  
Does Not Comply  
Corrected Diskette Needed

RAW SEQUENCE LISTING  
PATENT APPLICATION: US/09/689,343C

DATE: 07/19/2002 Error on p. 5  
TIME: 14:59:20

Input Set : A:\NEB-181.ST25.txt  
Output Set: N:\CRF3\07192002\I689343C.raw

RECEIVED

OCT 16 2002

TECH CENTER 1600/2900

3 <110> APPLICANT: Vaisvila, Romualdus  
4 Morgan, Richard D.  
5 Kucera, Rebecca B.  
6 Claus, Toby B.  
7 Raleigh, Elisabeth A.  
9 <120> TITLE OF INVENTION: Method For Cloning And Producing The MseI Restriction  
Endonuclease

11 <130> FILE REFERENCE: NEB-181  
13 <140> CURRENT APPLICATION NUMBER: US 09/689,343C  
14 <141> CURRENT FILING DATE: 2000-10-12  
16 <160> NUMBER OF SEQ ID NOS: 9  
18 <170> SOFTWARE: PatentIn version 3.1  
20 <210> SEQ ID NO: 1  
21 <211> LENGTH: 903  
22 <212> TYPE: DNA  
23 <213> ORGANISM: Micrococcus sp.  
25 <220> FEATURE:  
26 <221> NAME/KEY: CDS  
27 <222> LOCATION: (1)..(900)  
28 <223> OTHER INFORMATION:  
30 <400> SEQUENCE: 1  
32 atg cct atc tcg acc gtc tgg acg ccg gac gga gac gac ctc atc gtg 48  
33 Met Pro Ile Ser Thr Val Trp Thr Pro Asp Gly Asp Asp Leu Ile Val  
34 1 5 10 15  
36 gag gcg gac aac ctc gat ttc att caa acg ctc ccc gac ggc agc ttc 96  
37 Glu Ala Asp Asn Leu Asp Phe Ile Gln Thr Leu Pro Asp Ala Ser Phe  
38 20 25 30  
40 cga atg atc tac atc gat ccg ccg ttc aac aca ggg cga acg cag cgg 144  
41 Arg Met Ile Tyr Ile Asp Pro Pro Phe Asn Thr Gly Arg Thr Gln Arg  
42 35 40 45  
44 ctt cag tcg ctc aag acg acc cgc tcg aca ggg tcg cga gtc ggc 192  
45 Leu Gln Ser Leu Lys Thr Thr Arg Ser Val Thr Gly Ser Arg Val Gly  
46 50 55 60  
48 ttc aaa ggc cag acg tac gac acg gtc aag agc act ctg cac tcg tat 240  
49 Phe Lys Gly Gln Thr Tyr Asp Thr Val Lys Ser Thr Leu His Ser Tyr  
50 65 70 75 80  
52 gac gac gct ttc acc gac tat tgg tcg ttc ctc gaa ccg cgt ctc ctg 288  
53 Asp Asp Ala Phe Thr Asp Tyr Trp Ser Phe Leu Glu Pro Arg Leu Leu  
54 85 90 95  
56 gag gct tgg cgg ttg ctc acc cct gac ggc gcg ctc tat ctt cat ctg 336  
57 Glu Ala Trp Arg Leu Leu Thr Pro Asp Gly Ala Leu Tyr Leu His Leu  
58 100 105 110  
60 gat tac cgc gag gtt cac tac gcc aag gtc gtc ctc gac gcg atg ttc 384  
61 Asp Tyr Arg Glu Val His Tyr Ala Lys Val Val Leu Asp Ala Met Phe

RAW SEQUENCE LISTING  
PATENT APPLICATION: US/09/689,343C

DATE: 07/19/2002  
TIME: 14:59:20

Input Set : A:\NEB-181.ST25.txt  
Output Set: N:\CRF3\07192002\I689343C.raw

62	115	120	125														
64	gga	cgc	gaa	arg	ttc	ctg	aac	gag	ctg	atc	tgg	gcf	tac	gac	tac	ggc	432
65	Gly	Arg	Glu	Ser	Phe	Leu	Asn	Glu	Leu	Ile	Trp	Ala	Tyr	Asp	Tyr	Gly	
66	130															140	
68	gcf	cgc	tcg	aag	arg	aag	tgg	ccc	acc	aag	cac	gac	aac	atc	ctc	gtg	480
69	Ala	Arg	Ser	Lys	Ser	Lys	Trp	Pro	Thr	Lys	His	Asp	Asn	Ile	Leu	Val	
70	145															160	
72	tat	gtg	aag	gac	ccg	aac	aac	tac	gtc	tgg	aac	ggt	cag	gat	gta	gat	528
73	Tyr	Val	Lys	Asp	Pro	Asn	Asn	Tyr	Val	Trp	Asn	Gly	Gln	Asp	Val	Asp	
74																175	
76	cgc	gag	ccc	tac	atg	gcf	ccc	ggg	ctc	gtt	aca	ccc	gag	aag	gta	gcf	576
77	Arg	Glu	Pro	Tyr	Met	Ala	Pro	Gly	Leu	Val	Thr	Pro	Glu	Lys	Val	Ala	
78																190	
80	ctt	ggc	aag	ctg	ccc	acc	gac	gtc	tgg	tgg	cac	aca	atc	gtt	ccg	cct	624
81	Leu	Gly	Lys	Leu	Pro	Thr	Asp	Val	Trp	Trp	His	Thr	Ile	Val	Pro	Pro	
82																205	
84	gcf	agc	aaa	gag	cgc	acc	ggg	tac	gcf	aca	cag	aag	ccg	gtc	ggc	atc	672
85	Ala	Ser	Lys	Glu	Arg	Thr	Gly	Tyr	Ala	Thr	Gln	Lys	Pro	Val	Gly	Ile	
86																220	
88	atc	ctg	cgc	atg	att	cag	gcf	agc	agc	aat	gaa	ggc	gac	tgg	gtt	ctg	720
89	Ile	Arg	Arg	Met	Ile	Gln	Ala	Ser	Ser	Asn	Glu	Gly	Asp	Trp	Val	Leu	
90	225					230					235					240	
92	gat	ttc	ttc	gct	ggt	agt	ggg	acg	acc	ggc	gcc	gcf	gac	ctc		768	
93	Asp	Phe	Phe	Ala	Gly	Ser	Gly	Thr	Thr	Gly	Ala	Ala	Ala	Arg	Gln	Leu	
94																255	
96	gga	cgc	cgt	ttt	gtg	ctc	gta	gac	gtc	aac	cca	gaa	gca	atc	gcf	gta	816
97	Gly	Arg	Arg	Phe	Val	Leu	Val	Asp	Val	Asn	Pro	Glu	Ala	Ile	Ala	Val	
98																270	
100	atg	gca	aaa	cg	ttg	gat	gac	ggg	gca	ttg	gac	acc	agc	gtg	acg	atc	864
101	Met	Ala	Lys	Arg	Leu	Asp	Asp	Gly	Ala	Leu	Asp	Thr	Ser	Val	Thr	Ile	
102						275					280					285	
104	gtg	cag	act	ccc	cag	agt	gac	cca	cga	acc	gac	gga	tga			903	
105	Val	Gln	Thr	Pro	Gln	Ser	Asp	Pro	Arg	Thr	Asp	Gly					
106						290					295					300	
109	<210> SEQ ID NO: 2																
110	<211> LENGTH: 300																
111	<212> TYPE: PRT																
112	<213> ORGANISM: Micrococcus sp.																
114	<400> SEQUENCE: 2																
116	Met	Pro	Ile	Ser	Thr	Val	Trp	Thr	Pro	Asp	Gly	Asp	Asp	Leu	Ile	Val	
117	1				5				10					15			
119	Glu	Ala	Asp	Asn	Leu	Asp	Phe	Ile	Gln	Thr	Leu	Pro	Asp	Ala	Ser	Phe	
120					20				25					30			
122	Arg	Met	Ile	Tyr	Ile	Asp	Pro	Pro	Phe	Asn	Thr	Gly	Arg	Thr	Gln	Arg	
123					35				40					45			
125	Leu	Gln	Ser	Leu	Lys	Thr	Thr	Arg	Ser	Val	Thr	Gly	Ser	Arg	Val	Gly	
126					50				55					60			
128	Phe	Lys	Gly	Gln	Thr	Tyr	Asp	Thr	Val	Lys	Ser	Thr	Leu	His	Ser	Tyr	
129					65				70					75		80	

RAW SEQUENCE LISTING DATE: 07/19/2002  
 PATENT APPLICATION: US/09/689,343C TIME: 14:59:20

Input Set : A:\NEB-181.ST25.txt  
 Output Set: N:\CRF3\07192002\I689343C.raw

131 Asp Asp Ala Phe Thr Asp Tyr Trp Ser Phe Leu Glu Pro Arg Leu Leu  
 132 85 90 95  
 134 Glu Ala Trp Arg Leu Leu Thr Pro Asp Gly Ala Leu Tyr Leu His Leu  
 135 100 105 110  
 137 Asp Tyr Arg Glu Val His Tyr Ala Lys Val Val Leu Asp Ala Met Phe  
 138 115 120 125  
 140 Gly Arg Glu Ser Phe Leu Asn Glu Leu Ile Trp Ala Tyr Asp Tyr Gly  
 141 130 135 140  
 143 Ala Arg Ser Lys Ser Lys Trp Pro Thr Lys His Asp Asn Ile Leu Val  
 144 145 150 155 160  
 146 Tyr Val Lys Asp Pro Asn Asn Tyr Val Trp Asn Gly Gln Asp Val Asp  
 147 165 170 175  
 149 Arg Glu Pro Tyr Met Ala Pro Gly Leu Val Thr Pro Glu Lys Val Ala  
 150 180 185 190  
 152 Leu Gly Lys Leu Pro Thr Asp Val Trp Trp His Thr Ile Val Pro Pro  
 153 195 200 205  
 155 Ala Ser Lys Glu Arg Thr Gly Tyr Ala Thr Gln Lys Pro Val Gly Ile  
 156 210 215 220  
 158 Ile Arg Arg Met Ile Gln Ala Ser Ser Asn Glu Gly Asp Trp Val Leu  
 159 225 230 235 240  
 161 Asp Phe Phe Ala Gly Ser Gly Thr Thr Gly Ala Ala Ala Arg Gln Leu  
 162 245 250 255  
 164 Gly Arg Arg Phe Val Leu Val Asp Val Asn Pro Glu Ala Ile Ala Val  
 165 260 265 270  
 167 Met Ala Lys Arg Leu Asp Asp Gly Ala Leu Asp Thr Ser Val Thr Ile  
 168 275 280 285  
 170 Val Gln Thr Pro Gln Ser Asp Pro Arg Thr Asp Gly  
 171 290 295 300  
 173 <210> SEQ ID NO: 3  
 174 <211> LENGTH: 1236  
 175 <212> TYPE: DNA  
 176 <213> ORGANISM: Unknown  
 178 <220> FEATURE:  
 179 <223> OTHER INFORMATION: Environmental DNA  
 181 <220> FEATURE:  
 182 <221> NAME/KEY: CDS  
 183 <222> LOCATION: (1)..(1233)  
 184 <223> OTHER INFORMATION:  
 186 <220> FEATURE:  
 187 <221> NAME/KEY: misc\_feature  
 188 <222> LOCATION: (198)..(198)  
 189 <223> OTHER INFORMATION: Xaa = any amino acid  
 191 <220> FEATURE:  
 192 <221> NAME/KEY: misc\_feature  
 193 <222> LOCATION: (594)..(594)  
 194 <223> OTHER INFORMATION: N= G, A, C or T  
 196 <400> SEQUENCE: 3  
 198 atg cct aca ctg gat tgg ccc ggt aaa cag tta agc ttc cca cca gct  
 199 Met Pro Thr Leu Asp Trp Pro Gly Lys Gln Leu Ser Phe Pro Pro Ala

48

RAW SEQUENCE LISTING  
PATENT APPLICATION: US/09/689, 343C

DATE: 07/19/2002  
TIME: 14:59:20

Input Set : A:\NEB-181.ST25.txt  
Output Set: N:\CRF3\07192002\I689343C.raw

200	1	5	10	15	
202	acc tcc ttg cat ctg gag agt gtg gtc act gag gga gcg gag tca ccg				96
203	Thr Ser Leu His Leu Glu Ser Val Val Thr Glu Gly Ala Glu Ser Pro				
204	20	25	30		
206	cct aat cgt ctg att tgg gcg gac aac ctg ccg cta atg gta gat ttg				144
207	Pro Asn Arg Leu Ile Trp Ala Asp Asn Leu Pro Leu Met Val Asp Leu				
208	35	40	45		
210	ttg gcc gaa tat gaa ggg aaa atc gat ctg atc tac gcc gat ccc cct				192
211	Leu Ala Glu Tyr Glu Gly Lys Ile Asp Leu Ile Tyr Ala Asp Pro Pro				
212	50	55	60		
214	ttt ttt acg gat cgt act tat gcg gcg cga atc ggt cat ggg gag gat				240
215	Phe Phe Thr Asp Arg Thr Tyr Ala Ala Arg Ile Gly His Gly Glu Asp				
216	65	70	75	80	
218	tcg cgt cgt cca caa acc tgg cag ctt gca gaa gga tat acg gac gag				288
219	Ser Arg Arg Pro Gln Thr Trp Gln Leu Ala Glu Gly Tyr Thr Asp Glu				
220	220 85	90	95		
222	tgg aag gat tta gat gaa tac ctg gac ttc ctt tat cca cgc ctg gta				336
223	Trp Lys Asp Leu Asp Glu Tyr Leu Asp Phe Leu Tyr Pro Arg Leu Val				
224	224 100	105	110		
226	ctg atg tat cga ctg ctg gca cca cac gga acg ctc tac ttg cac ctg				384
227	Leu Met Tyr Arg Leu Leu Ala Pro His Gly Thr Leu Tyr Leu His Leu				
228	228 115	120	125		
230	gac tgg cac gcc aat gcc tac gta cgt gta ctg ctt gat gag atc ttc				432
231	Asp Trp His Ala Asn Ala Tyr Val Arg Val Leu Leu Asp Glu Ile Phe				
232	232 130	135	140		
234	ggg cga cag cgg ttt ctc aac gag atc gtc tgg atc tat cac ggc ccc				480
235	Gly Arg Gln Arg Phe Leu Asn Glu Ile Val Trp Ile Tyr His Gly Pro				
236	236 145	150	155	160	
238	tca gcc atc cga cgc gcc ttc aag cgc aaa cat gat acc atc ttg gtt				528
239	Ser Ala Ile Arg Arg Ala Phe Lys Arg Lys His Asp Thr Ile Leu Val				
240	240 165	170	175		
242	tat gtg aaa ggt gaa aac tat aca ttc aat gcg gat gcg gtt cgt caa				576
243	Tyr Val Lys Gly Glu Asn Tyr Thr Phe Asn Ala Asp Ala Val Arg Gln				
244	244 180	185	190		
W-->	246 cct tac cat ccg agc acn cat aag acc ttc gct tcc tcc ccg aag gcc				624
W-->	247 Pro Tyr His Pro Ser Xaa His Lys Thr Phe Ala Ser Ser Pro Lys Ala				
248	248 195	200	205		
250	ggc ttt ggt aag gtg ccg gat ctg cag cgc ggc aaa gtg ccc gaa gac				672
251	Gly Phe Gly Lys Val Pro Asp Leu Gln Arg Gly Lys Val Pro Glu Asp				
252	252 210	215	220		
254	tgg tgg tat ttt ccg gtc gtg gcc cgt cta cac cga gaa cgg agc ggc				720
255	Trp Trp Tyr Phe Pro Val Val Ala Arg Leu His Arg Glu Arg Ser Gly				
256	256 225	230	235	240	
258	tat ccg act caa aag cct caa gcc ttg ctg gag cgg atc ctg ctg gcc				768
259	Tyr Pro Thr Gln Lys Pro Gln Ala Leu Leu Glu Arg Ile Leu Ala				
260	260 245	250	255		
262	tcc tcg aac gca ggc gat ctg gtg gca gac ttc ttc tgc ggc tca ggg				816
263	Ser Ser Asn Ala Gly Asp Leu Val Ala Asp Phe Phe Cys Gly Ser Gly				
264	264 260	265	270		

RAW SEQUENCE LISTING  
PATENT APPLICATION: US/09/689,343C

DATE: 07/19/2002  
TIME: 14:59:21

Input Set : A:\NEB-181.ST25.txt  
Output Set: N:\CRF3\07192002\I689343C.raw

266 aca acc gct gtg gtg gca gcc cgt ctg gga cgg cgc ttc ctg gtc aac	864
267 Thr Thr Ala Val Val Ala Ala Arg Leu Gly Arg Arg Phe Leu Val Asn	
268 275 280 285	
270 gat gca agc tgg cgc gcc gtt cat gtg aca cgc aca cgc ttg cta cgc	912
271 Asp Ala Ser Trp Arg Ala Val His Val Thr Arg Thr Arg Leu Leu Arg	
272 290 295 300	
274 gag gga gta agt ttc act ttt gaa cgc cag gaa act ttt act cta cct	960
275 Glu Gly Val Ser Phe Thr Phe Glu Arg Gln Glu Thr Phe Thr Leu Pro	
276 305 310 315 320	
278 atc cag cca ctt cca cca gat tgg ttg atc atc qcc qag gag caq att	1008
279 Ile Gln Pro Leu Pro Pro Asp Trp Leu Ile Ile Aia Glu Glu Gln Ile	
280 325 330 335	
282 cgc ctc caa gca ccc ttt ctc gta gat ttt tgg gaa gtg gac gat caa	1056
283 Arg Leu Gln Ala Pro Phe Leu Val Asp Phe Trp Glu Val Asp Asp Gln	
284 340 345 350	
286 tgg gat ggc aaa atc ttc cgc agc cgt cat caa ggc tta cgc tcc cgc	1104
287 Trp Asp Gly Lys Ile Phe Arg Ser Arg His Gln Gly Leu Arg Ser Arg	
288 355 360 365	
290 ctt cag gag cag gcg ctc tct cta cca ttg acc ggg aat gga ctg	1152
291 Leu Gln Glu Gln Ala Pro Leu Ser Leu Pro Leu Thr Gly Asn Gly Leu	
292 370 375 380	
294 ttg tgt gta cgg gta gtg agc cgt gaa ggg gaa tac tat gag ttc aca	1200
295 Leu Cys Val Arg Val Val Ser Arg Glu Gly Glu Tyr Tyr Glu Phe Thr	
296 385 390 395 400	
298 ggt cga gcc gat agc cct cac ccc gta tcg ttt tga	1236
299 Gly Arg Ala Asp Ser Pro His Pro Val Ser Phe	
300 405 410	
303 <210> SEQ ID NO: 4	
304 <211> LENGTH: 411	
305 <212> TYPE: PRT	
306 <213> ORGANISM: Unknown	
308 <220> FEATURE:	
309 <223> OTHER INFORMATION: Environmental DNA	
311 <220> FEATURE:	
312 <221> NAME/KEY: misc_feature	
313 <222> LOCATION: (198)..(198)	
314 <223> OTHER INFORMATION: Xaa = any amino acid	
316 <220> FEATURE:	
317 <221> NAME/KEY: misc_feature	
318 <222> LOCATION: (594)..(594)	
319 <223> OTHER INFORMATION: N= G, A, C or T	
321 <400> SEQUENCE: 4	
323 Met Pro Thr Leu Asp Trp Pro <del>Gly Lys</del> Gln Leu Ser Phe Pro Pro Ala	
324 1 5 10 15	
326 Thr Ser Leu His Leu Glu Ser Val Val Thr Glu Gly Ala Glu Ser Pro	
327 20 25 30	
329 Pro Asn Arg Leu Ile Trp Ala Asp Asn Leu Pro Leu Met Val Asp Leu	
330 35 40 45	
332 Leu Ala Glu Tyr Glu Gly Lys Ile Asp Leu Ile Tyr Ala Asp Pro Pro	

This is a protein sequence - amino acid  
P is not found at  
position 594

RAW SEQUENCE LISTING ERROR SUMMARY DATE: 07/19/2002  
PATENT APPLICATION: US/09/689,343C TIME: 14:59:22

Input Set : A:\NEB-181.ST25.txt  
Output Set: N:\CRF3\07192002\I689343C.raw

**Please Note:**

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:3; N Pos. 594  
Seq#:3; Xaa Pos. 198  
Seq#:4; Xaa Pos. 198

VERIFICATION SUMMARY  
PATENT APPLICATION: US/09/689, 343C

DATE: 07/19/2002  
TIME: 14:59:22

Input Set : A:\NEB-181.ST25.txt  
Output Set: N:\CRF3\07192002\I689343C.raw

L:246 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:576  
L:247 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:624  
L:359 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 after pos.:192